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STATE OF ALASKA

William A. Egan, Governor

ANNUAL REPORT OF PROGRESS, 1969 - 1970

FEDERAL AID IN FISH RESTORATION PROJECT F-9-2

SPORT FISH INVESTIGATIONS OF ALASKA

ALASKA DEPARTMENT OF FISH AND GAME

Wallace H. Noerenberg, Commissioner

DIVISION OF SPORT FISH

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INTRODUCTION

This report of progress consists of Job Segment Reports from the State of Alaska, Federal Aid In Fish Restoration, Project F-9-2, "Sport Fish Investigations of Alaska".

The studies reported herein are investigations evaluating the sport fish resources of the state. Recreational and other impacts on the fishery resources necessitates a continuous endeavor of ascertaining facts and knowledge of the fisheries. The 24 jobs reported on are of a continuing nature. The investigations are composed of 11 projects involved with the inventory and cataloging of the sport fish waters of the state, sport fishery creel censuses, and access. Fish species that received special investigational effort include: Dolly Varden, anadromous fish, grayling, sheefish, whitefish, pike, char, and salmon. The information gathered from the combined studies provides necessary background data for a better understanding of management problems and constitutes a basis for necessary future investigations.

The subject matter contained in these reports is incomplete, and the findings and interpretations subject to re-evaluation as work progresses.

RESEARCH PROJECT SEGMENT

State: Alaska

Project No.: F-9-2 *Name:* Sport Fish Investigations of Alaska.

Job No.: 6-A *Title:* **Inventory and Cataloging of the Sport Fish and Sport Fish Waters in Southwest Alaska.**

Period Covered: July 1, 1969 to June 30, 1970.

ABSTRACT

One lake on Afognak Island and one on Woody Island were surveyed. Eighteen lakes were test netted to evaluate wild and stocked populations of rainbow trout, Salmo gairdneri; silver salmon, Oncorhynchus kisutch; Dolly Varden, Salvelinus malma; and Arctic grayling, Thymallus arcticus. Shoreline surveys were made of all lakes and netted to determine the presence or absence of stickleback, Gasterosteus sp. Aerial, foot and skiff surveys were made for silver salmon; king salmon, O. tshawytscha; red salmon, O. nerka; and pink salmon, O. gorbuscha. A creel census for Dolly Varden, pink salmon and silver salmon was conducted on northeastern Kodiak Island streams. An experimental silver salmon egg take was conducted at Lake Rose Tead. The size, sex, and age composition of silver salmon from Lake Rose Tead and from the Buskin River were recorded. Public access and multiple-use programs were investigated.

RECOMMENDATIONS

Physical and biological surveys for all lakes on the Kodiak road system should be completed and an inventory initiated on popular fly-in lakes such as Uganik and Saltery lakes.

Age, sex, and size data should be analyzed for Karluk River king salmon and steelhead trout, Salmo gairdneri. Numbers and timing of these respective runs should be determined.

Steelhead investigations should also be intensified in Saltery River and the Buskin River.

OBJECTIVES

1. To determine and inventory the physical, chemical, and biological characteristics of potentially significant sport fishing streams and lakes in the region.

2. To survey lakes, streams and coastal marine areas for establishing the magnitude, distribution, timing, yearly fluctuations, and angler harvest of sport fish populations in areas of concern to resource management. Investigate, evaluate, and develop plans for the enhancement of anadromous fish stocks.

3. To investigate sources for Dolly Varden and silver salmon egg takes which appear to have significant future value in sport fish management; to attempt small scale pilot egg takes as a test of feasibility; and to conduct other studies related to egg taking and population evaluation as found necessary.

4. To evaluate multiple-use development projects (public and private) and their effects on the region's streams, lakes, and coastal marine areas for the proper protection of the sport fish resources.

5. To assist as required in the investigation of public access status to the region's sport fishing waters.

TECHNIQUES USED

Lakes were test netted with 125- x 6-foot sinking, variable-mesh, monofilament gill nets ranging from one-half to two inches in square measure. Fork length and weight were recorded in millimeters and pounds, respectively.

Concurrent with test netting, shoreline surveys were made to determine the presence of stickleback. A creel census was conducted on the Buskin River from August 27 through October 12. Total anglers for weekday periods were calculated by extrapolating the number of anglers observed during instantaneous hourly evening counts and by the number observed during 24-hour observation periods. Weekend extrapolations were based on a blanket creel census covering 50% of the total fishing period. Completed fishermen were interviewed to determine total fishing time and catch compostion.

Scales were collected and sex, weight, and length data recorded from silver salmon samples. Ages of grayling, rainbow trout, and silver salmon were assigned from scale impressions on cellulose-acetate sheets.

Foot and aerial surveys were made to determine the magnitude and timing of anadromous fish runs.

Adult silver salmon were captured with a 150- x 12-foot beach seine and standard egg-take procedures were followed.

Water samples were collected with a Kemmerer water sampler. Oxygen samples were fixed in the field using Hach powder pillows and titrated with Hach Stable PAO solution.

FINDINGS

Assessment and Inventory of Kodiak Island Lakes

Kodiak Island Lake Test Netting:

Eighteen Kodiak Island lakes (Figure 1) were sampled with gill nets to determine growth and survival of wild and stocked fish. Table 1 depicts the results of the 1969 sampling.

A total of 4.4 hours of test netting in Ambercrombie Lake produced five silver salmon from the 1967 plant averaging 260 mm in fork length. Fish from the 1968 plant were approximately 100 mm. Survival for both plants appeared good. Dolly Varden and stickleback are present in the lake.

Island Lake has natural populations of rainbow trout and Dolly Varden. Two hours of test netting produced one rainbow trout from the 1968 brood which measured 160 mm in fork length and one rainbow trout from the 1967 brood year which measured 220 mm in fork length. Four Dolly Varden averaged 212 mm in fork length. Stickleback and silver salmon are also present in Island Lake.

Few rainbow remain in Lilly Pond from the 1966 plant. A total of 11.5 hours of test netting produced two trout averaging 310 mm in fork length. Lilly Pond has a large population of stickleback and is scheduled for rehabilitation in 1970.

On September 17, one hour of test netting in Margaret Lake produced 26 age I+ silver salmon parr

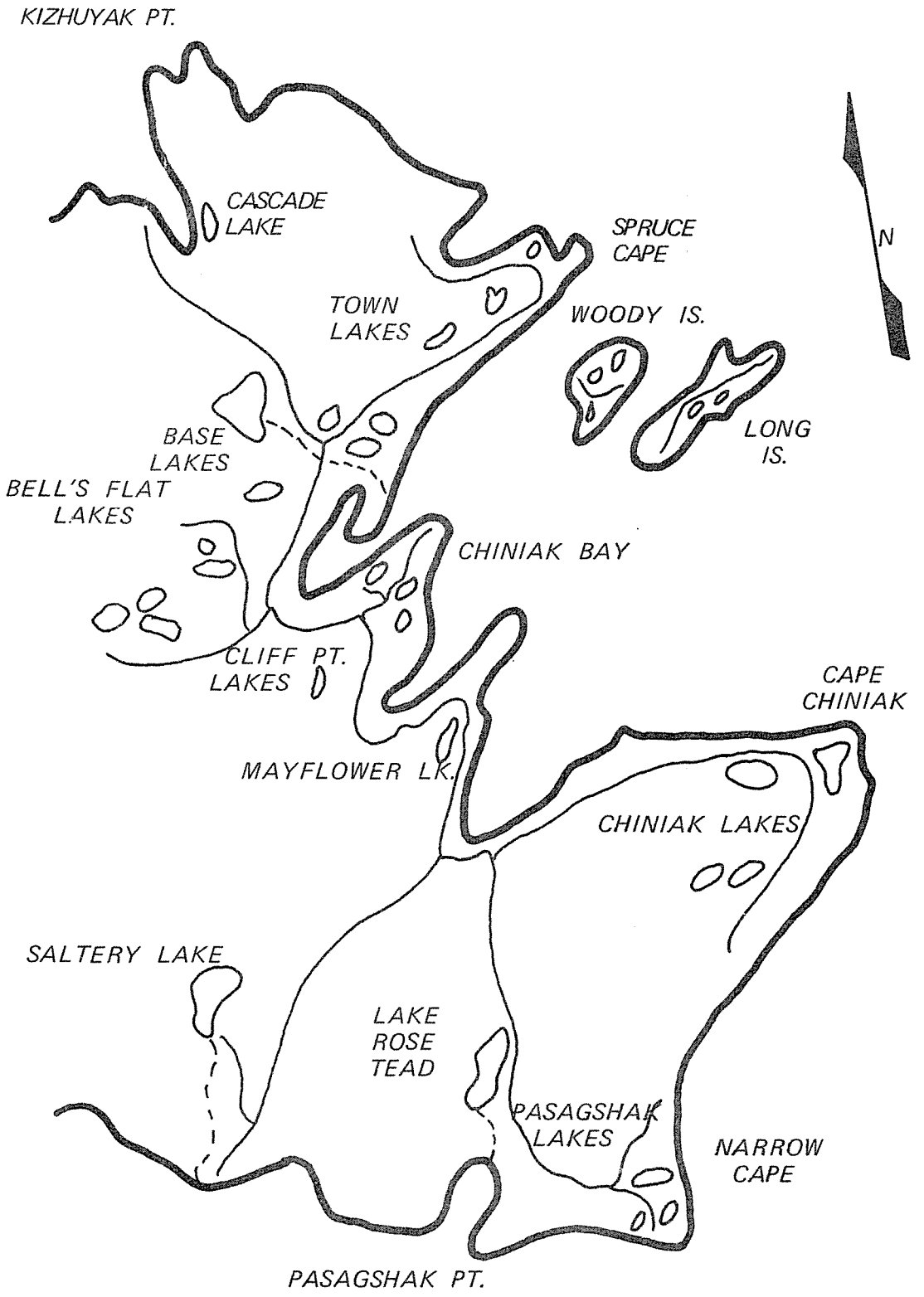

FIGURE 1 KODIAK ISLAND ROAD SYSTEM AND LAKES.

TABLE 1 Lakes Sampled with Variable-Mesh Gill Nets, Kodiak Area, 1969.

Lake Name	Date	Net Hours	Species*	Brood Year	No. Caught	Avg. Length (mm)	Avg. Weight (lbs)	Fish/ Net Hour	Location
Ambercrombie	8/ 6	1.4	SS	1968	3	102	----	2.1	Townlakes
	8/12	3.0	SS	1967	2	260	0.40	0.67	
			DV	wild	1	238	----	0.33	
Island	8/ 5	2.0	RT	1967	1	220	0.25	1.0	
				1968	1	160	0.10	1.0	
			DV	wild	4	212	0.21	2.0	
Lilly Pond	6/29	11.5	RT	1966	2	310	0.89	0.17	Base Lakes
Margaret	9/17	1.0	SS	1968	26	99	----	26.0	
Wonder	9/11	1.0	--	----	0	---	----	0.0	
Beaver Ponds	7/24	2.0	DV	wild	6	202	0.30	3.0	Bell's Flats
				scales, not readable					
Orbin	7/24	2.0	RT	1967	1	280	0.60	2.0	
			SS	1968	1	125	0.70		
			DV	wild	2	231	0.03		
Aurel	7/29	2.7	--	----	0	---	----	0.0	
Caroline	7/29	2.0	--	----	0	---	----	0.0	
Cicely	7/ 9	2.0	GR	1968	1	200	0.30	0.50	
Jack	6/29	11.0	RT	1965	2	218	0.26		Bell's Flats
				1967	5	159	0.12	0.72	Lakes
				1968	1	105	0.08		
Lee	7/24	2.0	--	----	0	---	----	0.0	
	8/21	4.0	RT	1963	1	375	1.20	0.25	
Horseshoe	7/28	2.0	RT	1966	3	251	0.45	3.0	
				1967	3	213	0.27		
Snag	7/ 4	2.0	RT	1967	2	221	0.25	2.5	Cliff Point
				1968	3	152	0.12		
Dragonfly	7/ 4	2.0	RT	1967	1	224	0.35	0.5	
Bull	7/23	2.5	RT	1967	1	345	1.08	0.8	Pasagshak
				1968	1	258	0.49		
Lupine	7/30	2.2	RT	1967	4	239	0.40	5.0	
				1968	7	196	0.22		

TABLE 1 (Cont.) Lakes Sampled with Variable-Mesh Gill Nets, Kodiak Area, 1969.

Lake Name	Date	Net Hours	Species*	Brood Year	No. Caught	Avg. Length (mm)	Avg. Weight (lbs)	Fish/ Net Hour	Location
Barry Lagoon	7/23	2.0	DV	wild	5	299	----	2.5	
Jupiter	7/31	2.0	--	----	0	---	----	0.0	
Saturn	7/31	2.8	RT	1967	2	248	0.33	0.7	Chiniak
Mayflower	6/30	2.0	SS	1968	9	98	0.03	5.5	
			DV	wild	2	152	0.13		
Pony	7/ 3	2.0	RT	1965	1	270	0.50	3.5	
			SS	1967	6	218	0.30		
Tanignak	8/14	4.0	RT	1966	1	330	0.25	0.3	Woody Island
Una	8/20	2.0	RT	1967	11	234	0.31	5.5	
Cascade	8/ 4	6.5	GR	1967	2	235	0.32	1.5	
				1968	1	172	0.15		
			RT	1966	7	243	0.38		

*DV - Dolly Varden, RT - Rainbow trout, SS - Silver salmon, GR - Grayling.

averaging 99 mm in fork length. This lake flows to the Buskin River and is a silver salmon rearing area. Stickleback are present.

Two hours of test netting in the Beaver Ponds failed to produced any stocked rainbow trout; however, six Dolly Varden averaging approximately 200 mm in length were captured. Orbin Lake is connected to the Beaver Ponds by a short stream. One rainbow trout from a 1967 plant was captured in the lake. Trout planted in the Beaver Ponds probably migrated into Orbin Lake. Two Dolly Varden averaging 231 mm were caught in Orbin Lake and approximately 50 Dolly Varden of this size were observed in the inlet. One silver salmon parr, 125 mm in length, was taken and many stickleback were observed.

Aurel, Caroline, and Cicely lakes are situated in the same basin and are connected by intermittent streams. They are stocked annually. No trout were taken from Aurel or Caroline lakes in 4.7 hours of test netting. Marriott (1969) failed to capture stocked rainbow trout from Aurel Lake and captured one rainbow trout from a 1967 plant in Caroline Lake. Fishermen are not successful in taking trout from these lakes. Survival appears to be poor. Stickleback are present but not abundant in these three lakes.

One hour of test netting in Cicely Lake produced one 200 mm grayling from a 1968 plant. Grayling were observed along the shoreline and were feeding on surface organisms. No stickleback were observed.

Jack and Lee lakes are connected by the Lee Lake outlet. In 11.0 hours of test netting, Jack Lake produced two, five, and one rainbow trout from the 1965, 1967, and 1968 plants, respectively. The fish averaged 218 mm, 159 mm, and 105 mm by year of plant. Lee Lake was sampled in July and August. A total of 6.0 hours produced one 375 mm rainbow trout from a 1963 plant. Anglers reported observing

dead trout near the Lee Lake outlet in the spring with large leeches, Hirudinea, attached. Stickleback were observed in Lee Lake and are assumed to be in Jack Lake.

Six rainbow trout were taken in two hours of test netting in Horseshoe Lake. Three fish from the 1966 plant averaged 251 mm in fork length and three fish stocked in 1967 averaged 213 mm. Horseshoe Lake supports heavy fishing pressure. No stickleback were observed.

Two hours of test netting in Snag Lake produced two rainbow trout from a 1967 plant averaging 221 mm in fork length and three trout averaging 152 mm from a 1968 plant. This lake contains stickleback and is not heavily fished.

Dragonfly Lake was sampled for two hours in which one rainbow trout from a 1967 plant was caught. It was 224 mm in fork length. Stickleback are present and the lake is fished heavily.

In two and one-half hours of sampling, Bull Lake produced two rainbow trout from the 1967 and 1968 plants, which were 345 mm and 258 mm in fork length, respectively. Rainbow trout from Bull Lake exhibited growth superior to all lakes sampled. Bull Lake is moderately fished by sport fishermen. No stickleback have been observed in Bull Lake.

Test netting in Lupine Lake indicated that the 1967 and 1968 rainbow trout plants have good growth and survival rates. In 2.2 hours of test netting, four rainbow trout from the 1967 plant averaged 239 mm in fork length. Seven rainbow trout from the 1968 plant averaged 196 mm in fork length. No stickleback were observed.

Marriott (1968) found good survival of silver salmon stocked in Barry Lagoon in 1965. Two hours of test netting on July 23 failed to produce indications of plant survival. Five Dolly Varden, averaging 299 mm in fork length, were also taken. The lagoon was restocked with silver salmon in 1969 and will be closely monitored. Stickleback are present in this lake.

No stocked trout have been taken in test nets for the second consecutive year in Jupiter Lake. Intensive sampling to determine the actual survival of trout is planned for 1970. Jupiter and Saturn lakes are popular with hike-in anglers. Stickleback are present in both lakes.

Saturn Lake, located near Jupiter Lake, produced two stocked trout from the 1967 plant in 2.8 hours of sampling. These fish averaged 248 mm. Trout were observed to be feeding on surface organisms and two anglers reported taking limit catches of "10-inch trout" from the lake.

Silver salmon stocked in Mayflower Lake in 1968 exhibited good survival and fair growth rates. In two hours of sampling, nine salmon were taken averaging 98 mm. Two Dolly Varden were also captured and stickleback were observed in the lake.

Two hours of test netting in Pony Lake indicated that a small number of rainbow trout survived from the 1965 plant. Survival and growth of the 1967 plant of silver salmon appears fair. One rainbow trout was 270 mm in length and six silver salmon averaged 218 mm.

In four hours of test netting, Tanignak Lake produced one rainbow trout 330 mm in fork length. Stickleback are present in the lake and the survival of stocked trout appears poor.

A 1967 plant of rainbow trout in Una Lake exhibited excellent growth and survival rates. A total of 11 trout was taken in 2 hours of test netting. Trout taken averaged 234 mm. Stickleback are present.

Arctic Grayling Investigations:

Grayling investigations were centered around Cascade, Cicely, Wonder, and Upper Malina lakes.

On August 4, 1969, a variable-mesh gill net was fished in Cascade Lake for 6.5 hours (Table 1), and a foot survey was made on the inlet streams. Approximately 400 - 500 age class 0+ grayling were observed in and near the mouth of the main inlet.

A total of 25 grayling fry averaging 48 mm in fork length was captured with a section of beach seine. The inlet area was improved for grayling spawning (Marriott, 1969) by the Kodiak Conservation Club and natural reproduction is firmly established. Two grayling from the 1968 brood year were taken by gill net and averaged 173 mm in fork length. A grayling from the 1968 brood year measuring 235 mm was also taken. Observations were again made on Cascade Lake on October 16. In six hours of hook-and-line sampling, one grayling, 180 mm, from the 1968 brood year was taken along with four rainbow trout, 268 mm average fork length. Anglers reported good rainbow trout and grayling catches. No stickleback have been observed in the lake since the 1965 rehabilitation.

Cicely Lake was test netted on June 7, 1969, and one 200 mm grayling was taken in one hour. Several grayling approximately 200 mm in length were observed feeding on surface organisms during a shoreline foot survey. This lake was stocked with 10,000 grayling fry in 1968 and should support a 1970 sport fishery. No stickleback were observed.

In Wonder Lake, one hour of test netting failed to produce age class II grayling stocked in 1968. No fish were observed in this lake, and the relative abundance of food material indicates that it may still be barren.

During 5.5 hours of test netting in Upper Malina Lake, none of the 1968 stock of 50,000 grayling fry was encountered. This lake is approximately 360 acres in size. Unsuccessful netting does not necessarily indicate a total mortality. Due to the presence of a large number of red salmon, the nets were pulled and future netting is planned.

Stomach Analysis:

The stomach contents of gill-net sampled fish from ten lakes were analyzed. Test netting was accomplished within 30 days after the 1969 stocking of silver salmon and rainbow trout. Table 2 presents the results of the analysis. None of the 39 stomach samples examined contained rainbow trout or silver salmon. The fish were stocked at a rate of 200 per surface acre and 2,480/lb. and 625/lb., respectively.

Assessment and Inventory of Sport Fish Environment

Lake Surveys:

Biological and physical observations were recorded on lake survey cards for Upper Malina Lake on Afognak Island and Una Lake on Woody Island.

Upper Malina Lake is a popular fly-in lake approximately 40 air miles from Kodiak on southwestern Afognak Island (T23S, R23W, Sec. 30 and 29). The lake is approximately 360 surface acres in size, has a maximum recorded depth of 98 feet, and is situated 285 feet above sea level. There is one main inlet to Upper Malina Lake and one major outlet, which flows through Lower Malina Lake and ultimately to salt water. Dolly Varden of varying age classes were observed in the inlet with approximately 5,000 spawning red salmon. Five hours of test netting revealed the presence of rainbow trout, Dolly Varden, red salmon, and stickleback. The lake was stocked with 50,000 grayling fry in 1968.

Una Lake is located on Woody Island (T28S, R9W, Sec. 3) and is approximately five acres in size and less than ten feet deep. The lake is situated five feet above sea level and occasionally receives salt spray from Chiniak Bay. Una Lake has one small inlet from a surrounding marsh and has a predominantly sandy

bottom and shoreline. The outlet flows approximately 100 yards to salt water. Stickleback were plentiful, and 11 rainbow trout from a 1967 plant of 1,000 were taken in 2 hours of test netting. The trout averaged 234 mm. Although small, this lake has definite sport fishing potential.

TABLE 2 Stomach Content of Gill-Net Sampled Fish, Following the Lake Stocking, Kodiak Island, 1969.

Lake	No. of Fish	Species*	Length (mm)	Empty	Stomach Content (%) Insect	Stickleback	Fresh Water Leeches	Fresh Water Shrimp	Fresh Water Snails
Barry Lagoon	5	DV	299	20.0	---	60.0	---	---	20.0
Bull Lake	2	RT	301	---	---	----	100.0	---	----
Cascade	4	RT	268	25.0	25.0	----	----	---	50.0
Dragonfly	1	RT	224	---	---	----	100.0	---	----
Horseshoe	6	RT	232	---	83.3	----	16.7	---	----
Lee Lake	1	RT	375	---	---	----	----	100.0	----
Lilly Pond	2	RT	310	---	50.0	----	----	---	----
Lupine	11	RT	212	18.2	0.6	----	50.0	27.2	----
Saturn	2	RT	248	---	100.0	----	----	---	----
Snag	5	RT	179	20.0	80.0	----	----	---	----

*DV - Dolly Varden; RT - Rainbow trout.

Late Winter Ice Conditions:

On February 21, 1970, a cursory examination was made of five roadside lakes which have had a history of low dissolved oxygen. Table 3 lists the conditions observed on these lakes.

Mild winter conditions prevailed throughout most of the winter and no winter mortality of sport fish is anticipated for the 1969-70 period.

Assessment and Inventory of Anadromous Fish Populations

King Salmon:

An aerial king salmon count was made in the Karluk River on August 19, 1969. Flying conditions and visibility were excellent. Results of this count are shown in Table 4.

Commercial Fisheries Division personnel counted 850 king salmon from the Karluk weir to Portage during the last week in August. Marriott (1968) postulated that "the weir-to-Portage segment of the river, can be

expected to account for approximately 50 percent of the run".

TABLE 3 Winter Observations on Kodiak Island Lakes, February 21, 1970.

Lake	Inches Ice	Oxygen
Snag	8	9.4
Dragonfly	6	12.1
Lee	Ice unsafe - open water around outlet.	
Jack	Open water around outlet and inlet.	
Lilly Pond	Entire east shore free of ice.	

TABLE 4 Aerial Count of Karluk River King Salmon, August 19, 1969.

River Section	Aerial Count
Above weir (weir count)*	63
Weir to Portage	738
Portage to Lagoon	900
Total Count	1,701
Estimated Total Run	1,750

*Commercial Fisheries Division weir situated at the outlet of Karluk Lake.

Correlation between the obtained data indicates a total spawning escapement of 1,700 - 1,750 king salmon in the Karluk River. A surveillance trip to the Karluk River on August 29 indicated the peak period of king salmon spawning had elapsed.

Red Salmon:

Counts of red salmon were made on the inlets and west shore of Buskin Lake, the inlets to Lake Rose Tead, and in conjunction with the Upper Malina Lake survey on Upper Malina Lake Creek. These counts are summarized in Table 5.

Extremely low water conditions during early August prevented salmon from entering the Buskin Lake tributaries, and most red salmon ultimately spawned along the west shore of Buskin Lake.

TABLE 5 Kodiak Area Red Salmon Counts, 1969.

System	Date	Number Counted	Est. Spawning Escapement
Buskin	8/ 6/69	790	900
Lake Rose Tead	9/ 8/69	4,650	4,700
Upper Malina Lake Creek	8/15/69	5,000	5,000

In 1968 an estimated 1,700 red salmon spawned along the shoreline of Lake Rose Tead (Marriott, 1969). The estimated 4,700 spawners in 1969 represents an increase of 276% over 1968. This is indicative of the excellent rearing conditions created in Lake Rose Tead by the 1964 major Tsunami (Alaska Department of Fish and Game, 1965).

On August 15, 1969, approximately 2,500 red salmon were observed spawning in the inlet to Upper Malina Lake on Afognak Island and an additional 2,500 were observed at the mouth of the creek.

Pink Salmon:

The Buskin River was opened to salmon fishing on August 27, and a creel census was conducted to determine the total sport fish harvest. This data is presented in Table 6. No pink salmon were observed in angler creels after September 10. The total catch was approximately 800. Most anglers were fishing for silver salmon and incidentally caught pink salmon were released.

During a foot survey of the Buskin system on September 3, 66,450 pink salmon were counted. The total Buskin River sport take of pink salmon was approximately 0.12% of the escapement.

Silver Salmon:

Foot and aerial surveys were conducted on seven Kodiak Island streams, and counts made by Commercial Fisheries Division personnel were reviewed. An intensive creel census was conducted on the Buskin River. Periodic creel censuses were made on eight other streams. Table 7 presents silver salmon escapement and harvest data for northeastern Kodiak Island.

The Buskin River creel census (Table 6) indicated that recreational fishermen harvested 2,200 adult silver salmon from August 27 through October 12. Silver salmon were in spawning condition by October 12. Very few adult salmon were taken after that date. Table 6 presents the silver salmon harvest data by time periods and by weekend and weekday. The 584 censused anglers fished an average 2.17 hours, catching approximately 0.47 silver salmon per trip. A total of 56 sport-caught silver salmon (Table 8) were weighed, measured, sexed, and aged.

The male-to-female ratio of silver salmon caught was 2:3. The male round weight averaged 12.3 pounds; females averaged 10.0 pounds. Average fork length of males was 31.1 cm as compared to 29.3 cm for females. All silver salmon examined were age class 2.1.

On October 30, 1969, a foot and skiff survey (Table 9) was made on the entire Buskin system to estimate the total silver salmon spawning escapement.

TABLE 6 Buskin River Creel Census, 1969.

Date	Completed Anglers Contacted	No. Angler Trips	Total Angler Hours	Average Length/ Trip	No. Hours Fished	Calculated Total No. Caught*			Fish/Angler Hour			No. SS/ Angler Trip	No. Salmon/ Angler Trip
						SS	PS	DV	SS	PS	DV		
Weekdays:													
8/27-9/10	35	864	1,227	1.42	49.7	592	97	---	0.48	0.08	---	0.69	0.80
9/11-9/25	133	844	2,018	2.39	317.9	464	---	686	0.23	---	0.34	0.55	0.55
9/26-10/12	88	237	415	1.75	154.0	50	---	257	0.12	---	0.62	0.21	0.21
Weekends:													
8/27-9/10	179	1,139	2,620	2.30	411.7	471	707	52	0.18	0.27	0.02	0.41	1.03
9/11-9/25	104	795	1,876	2.36	245.4	356	---	1,520	0.19	---	0.81	0.45	0.45
9/26-10/12	45	615	1,218	1.98	89.1	179	---	804	0.15	---	0.66	0.29	0.29
	584	4,494	9,374	2.00	1,267.8	2,112	804	3,319	0.23	0.09	0.35	0.47	0.65

*SS - Silver Salmon; PS - Pink Salmon; DV - Dolly Varden

TABLE 7 Silver Salmon Escapement Estimates for Northeastern Kodiak Island, 1969.

System	Date	Method of Survey	Escapement Count	Escapement Est.	Est. Catch	Est. Total Run	Spawning Peak	Observer
Buskin Lake	*	Foot	656	850	2,200	3,050	10/30-11/ 6	Van Hulle
Lake Rose Tead	*	Foot	1,957	2,000	none	none	10/12-10/18	Van Hulle
							10/28-11/ 5	Van Hulle
Salonie Creek	9/16	Aerial	450					Eaton
	10/ 2	Foot	100	450	225	450	10/21-10/28	Van Hulle
	10/21	Aerial	225					Van Hulle
Olds River	10/21	Aerial	260	275	25	300	10/21-10/28	Van Hulle
Rosyln Creek	9/16	Aerial	300	300	25	300	----	Eaton
	10/ 9	Foot	17					Van Hulle
Lake Miam	10/21	Aerial	500	500	---	500	10/21-10/28	Van Hulle
Pillar Creek	9/12	Aerial	50	50	---	50	----	Eaton
Kalsin River	9/16	Aerial	150	150	20	150	10/21-10/28	Eaton
Saltery Lake**	10/21	Aerial	100	---	200	---	10/21-10/28	Van Hulle

*Periodic foot surveys made from September 10 to November 10.
**Poor observation conditions.

TABLE 8 Age, Length, Weight, and Sex Composition of Sport-Caught Silver Salmon, Buskin River, 1969.

	Male	Female
Number	23	33
Age	2.1	2.1
Mean Weight	12.3 lbs.	10.05 lbs.
Mean Length	31.1 cm	29.3 cm

TABLE 9 Buskin Lake System Silver Salmon Escapement Count, 1969.

Area	Count	Estimate
Inlets to Buskin Lake	72	75
Buskin Lake	30	30
Buskin Lake to Bunker Creek	261	325
Bunker Creek to Buskin Bridge No. 6	134	175
Bridge No. 6 to Bridge No. 5	109	180
Bridge No. 5 to Bridge No. 3	25	40
Bridge No. 3 to Bridge No. 1	25	25
Total	656	850

A total 656 silver salmon was observed. It was estimated that approximately 850 adult silver salmon were in the river at this time. An estimated 72% of the total silver salmon escapement into the Buskin River was taken by recreational anglers.

The Buskin River silver salmon spawning peak occurred from October 30 to November 6. Spawning activity continued until the third week in December.

Periodic ground and skiff counts were made of Lake Rose Tead during October and November to estimate the escapement of spawning silver salmon (Table 10).

Approximately 2,000 silver salmon spawned in the inlets to Lake Rose Tead (Figure 2). Two peak spawning periods occurred during October 12-18 and October 28-November 5.

Marriott (1968, 1969) lists Lake Rose Tead escapements of silver salmon from 1965, 1966, 1967, and 1968 as 600, 1,600, 2,600, and 3,500, respectively. The reduced 1969 escapement partially reflects an accelerated sport fishery on this run of silver salmon. Creel census efforts will be intensified in this area during the 1970 season.

On September 16 approximately 450 silver salmon were observed in Salonie Creek. The October 21 aerial survey accounted for 225 silver salmon. Creel census checks indicated that sport fishing on Salonie Creek was fairly intensive, during which an estimated one-half of the escapement was harvested by recreational anglers.

Periodic creel checks and one aerial survey of the Olds River indicated approximately 200 spawning silver salmon and a sport catch of approximately 25 fish.

On September 16 the 300 silver salmon observed in Rosyln Creek were dispersed throughout the river and the sport catch was approximately 25 fish. A foot survey conducted on October 9 on the upper portion of the creek indicated the presence of silver salmon. Total number was not determined.

TABLE 10 Lake Rose Tead Silver Salmon Escapement Count, 1969.

Area	Number	Spawning Peak
West Mountain Spring	40	10/12-10/18
Middle Spring	8	10/12-10/18
Near Spring	12	10/12-10/18
Roadside Creeks	679	10/12-10/18
Left Spring	100	10/12-10/18
Middle Creek	51	10/12-10/18
Main Channel to Right Spring	115	10/12-10/18 10/28-11/ 5
Perimeter Lake	16	10/12-10/18 10/28-11/ 5
Egg-Take Site	715	10/26
Taken for Eggs	105	10/26
Gravel Pit	116	10/12-10/18 10/28-11/ 5
Total	1,957	

Lake Miam, Pillar Creek, and Kalsin River are not heavily fished. These streams were investigated in conjunction with Kodiak egg-take activities. Saltery Lake and River supported a fair silver salmon fishery; however, poor counting conditions in this basin precluded making a valid escapement estimate.

Dolly Varden:

The Buskin River creel census (Table 6) indicated a total take of approximately 3,300 Dolly Varden from August 27 to October 10.

Catch per unit of effort on Dolly Varden increased as silver salmon catch per unit of effort decreased. The accelerating catch rate reflects a seasonal increase in the number of Dolly Varden in the Buskin River and in the number of anglers fishing for them. Anglers indicated a reluctance to fish for silver salmon for prolonged periods when char were readily available. The Dolly Varden fishery continued until December 1.

Silver Salmon Egg Take

On October 23, 150 silver salmon were captured with a 150-foot seine on the west side of the cause-way

crossing Lake Rose Tead (Figure 2), and 110 females were placed in a temporary holding pen for ripening. Examination of 43 females indicated that most fish in the holding area were ripening, although silver salmon in the inlets were spawned out. It appeared that Lake Rose Tead silver salmon were holding in a school near the cause-way and entering the inlet creeks as maturation occurred.

On October 25 a total of 75 female and 30 male silver salmon were spawned; approximately 292,000 eggs were taken.

Table 11 presents the age, length, and weight of Lake Rose Tead silver salmon utilized in the 1969 egg take. Male silver salmon were selected for size and hardiness and females for ripeness. Table 11 does not statistically represent the true age and size composition of Lake Rose Tead silver salmon but does indicate that a sizable portion of the run consists of age group 1.1 fish.

TABLE 11 Lake Rose Tead Silver Salmon Age and Size Analysis, 1969.

Age	Sex	Number	Percent	Average Length (cm)	Average Weight (lbs.)
1.1	F	27	42.9	72.0	*
2.1	F	36	57.1	73.0	*
1.1	M	16	61.5	75.0	11.1
2.1	M	10	38.5	79.5	13.6

*The average weight of 14 silver salmon weighed before the eggs were removed was 10.8 lbs.

Public Access Assistance

A systematic program of checking the land status of Kodiak Island waters was initiated and this information filed in lake and stream files.

Lake and trail signs were repainted, and in some cases, replaced. A total of eight lakes were marked for the first time.

Evaluation of Multiple Water Usage

An application to divert water from a small, unnamed creek, tributary to Dry Spruce Bay, was considered. The permit was approved since the project would not involve a significant sport or commercial fish population or alter the ecology of the area.

Time perimeters were established for the Department of Highways on the installation of Armour rock on the Chiniak Creek culverts.

LITERATURE CITED

Alaska Department of Fish and Game. 1965. Post-Earthquake Fisheries Evaluation. An Interim Report on the March, 1964 Earthquake Effects on Alaska's Fishery Resources, 3-20.

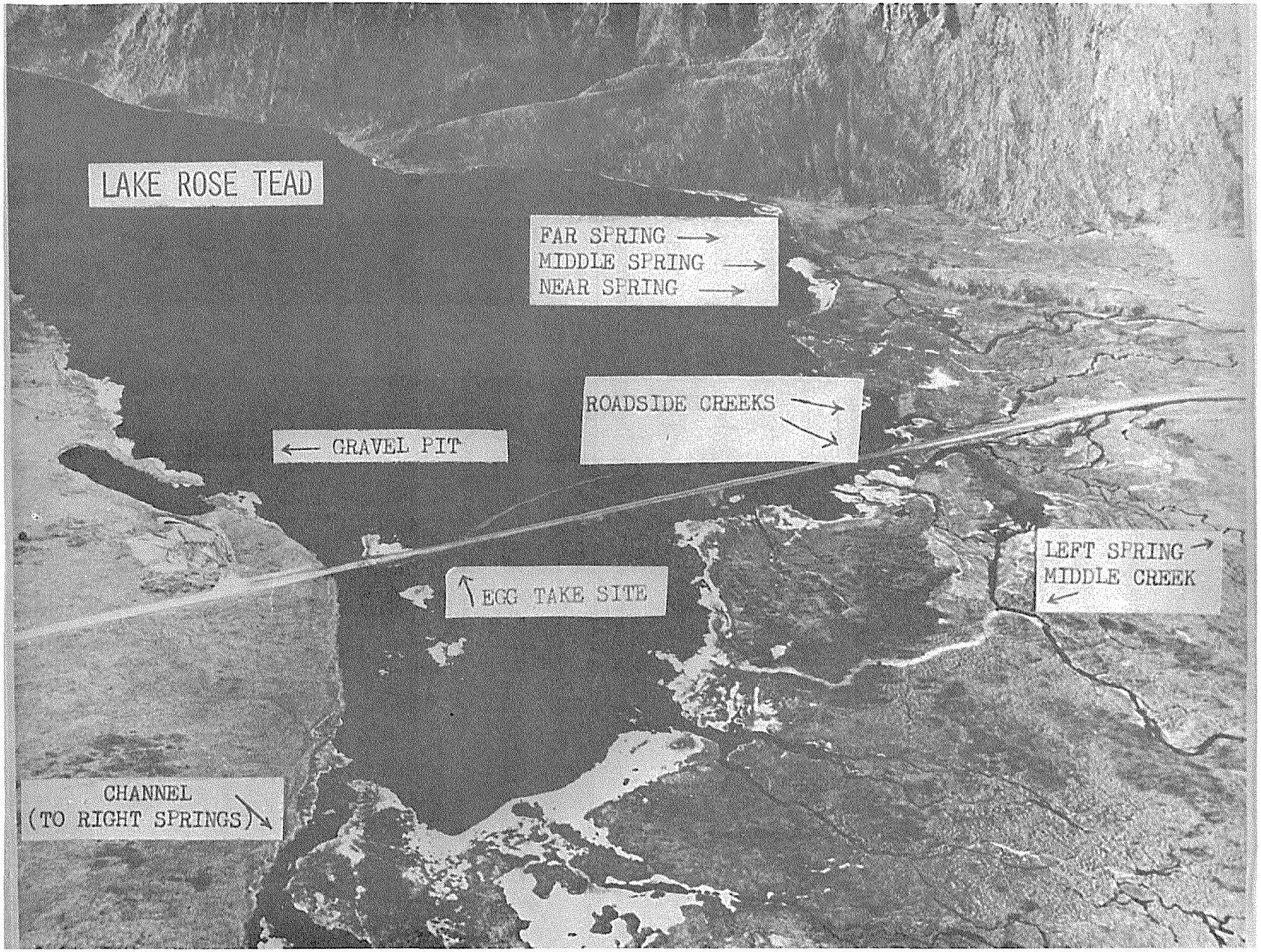

FIGURE 2 MAIN SILVER SALMON SPAWNING AREAS AND THE SILVER SALMON EGG-TAKE SITE ON LAKE ROSE TEAD.

Marriott, Richard A. 1968. Inventory and Cataloging of the Sport Fish and Sport Fish Waters in Southwest Alaska. Alaska Department of Fish and Game. Federal Aid In Fish Restoration, 1967-1968, Project F-5-R-9, 9:81-93.

_____. 1969. Inventory and Cataloging of the Sport Fish and Sport Fish Waters in Southwest Alaska. Alaska Department of Fish and Game. Federal Aid In Fish Restoration, Annual Report of Progress, 1968-1969, Project F-9-1, 10:93-109.

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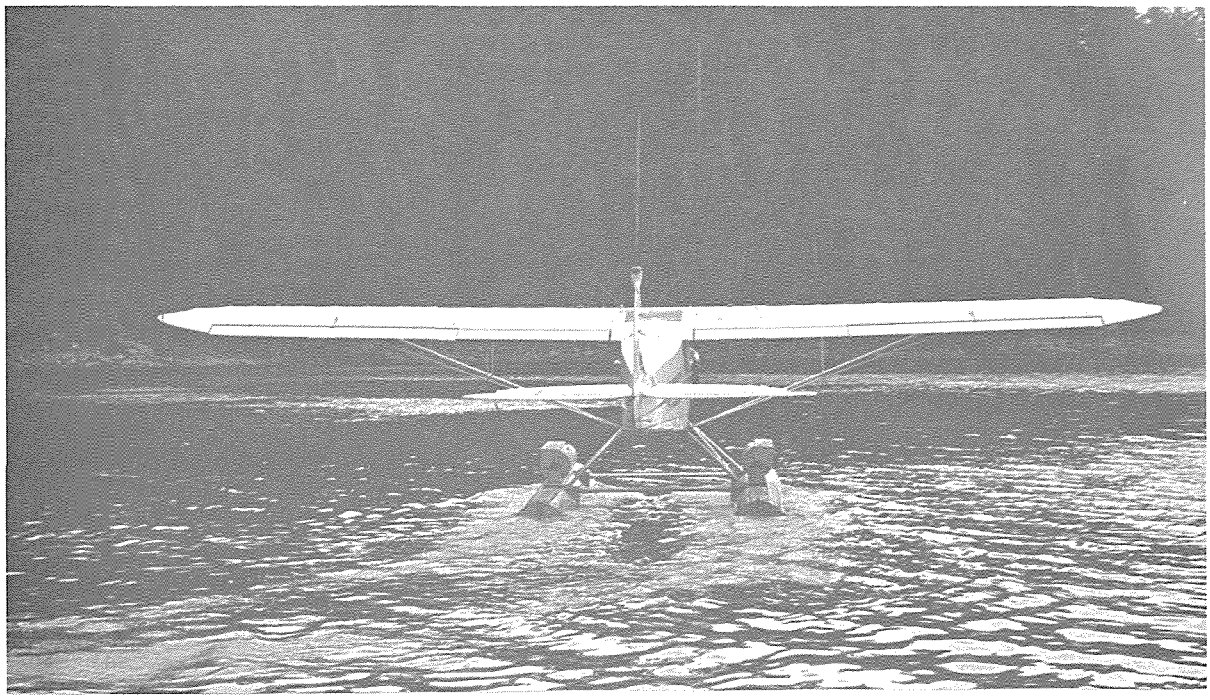

ONE OF THE FISH STOCKING TECHNIQUES USED IN ALASKA.